



DEPARTMENT OF ENERGY

Notice of Availability of the Final Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative Demonstration and Waste Incidental to Reprocessing Determination

AGENCY: Office of Environmental Management, U.S. Department of Energy.

ACTION: Notice of availability.

SUMMARY: The U.S. Department of Energy (DOE) announces the availability of the *Final Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative Demonstration, U.S. Department of Energy* (Final WIR Evaluation) and associated *Waste Incidental to Reprocessing Determination for the Test Bed Initiative Demonstration at the Hanford Site, Washington* (WIR Determination). The Final WIR Evaluation demonstrates that the waste from DOE's proposed Test Bed Initiative (TBI) Demonstration is waste incidental to reprocessing of spent nuclear fuel, is not high-level radioactive waste (HLW), and may be managed as low-level radioactive waste (LLW). DOE prepared the Final WIR Evaluation pursuant to DOE Order 435.1, *Radioactive Waste Management*, and the criteria in Chapter II.B.(2)(a) of DOE Manual 435.1-1, *Radioactive Waste Management Manual*. DOE consulted with the Nuclear Regulatory Commission (NRC) on the *Draft Waste Incidental to Reprocessing Evaluation for the Test Bed Initiative Demonstration* (Draft WIR Evaluation) and made the Draft WIR Evaluation available for comments from States, Tribal Nations, stakeholders and the public. DOE prepared the Final WIR Evaluation after carefully considering comments received from the NRC, States, Tribal Nations, stakeholders and the public, and after performing revisions of analyses and technical documents. Based on the Final WIR Evaluation, DOE determined that the pretreated and solidified waste is incidental to reprocessing of spent nuclear fuel, is non-HLW, and is to be managed as LLW.

ADDRESSES: The Final WIR Evaluation and WIR Determination are available on the Internet at <https://www.hanford.gov/page.cfm/TestBedInitiative> for public review.

FOR FURTHER INFORMATION CONTACT: For further information about the Final WIR Evaluation or WIR Determination, please contact Mr. Richard Valle by mail at U.S. Department of Energy, Office of River Protection, P.O. Box 450, MSIN H6-60, Richland, WA 99352, by phone at (509) 376-7256, or by email at richard_j_valle@orp.doe.gov.

SUPPLEMENTAL INFORMATION: DOE currently stores radioactive waste in underground tanks at the Hanford Site in the State of Washington. The waste was generated, in part, by the prior reprocessing of spent nuclear fuel for defense-related activities during the Manhattan Project and Cold War eras. Hanford's current mission focuses on the cleanup and remediation of those wastes and ultimate closure of the site. As part of that mission, DOE is retrieving waste from the Hanford tanks, separating the low-activity waste (LAW) from other waste in the Hanford tanks and vitrifying (immobilizing in a glass matrix) some of the LAW. DOE has not selected a supplemental treatment method for the remaining LAW in the Hanford tanks.¹ The proposed TBI Demonstration would demonstrate a potential supplemental LAW treatment approach.

The Final WIR Evaluation concerns approximately 2,000 gallons of waste from Hanford Tank SY-101, which, under the proposed TBI Demonstration, will be pretreated at the Hanford Site to remove most key radionuclides, then treated and solidified (grouted) at an offsite, permitted, commercial facility and disposed of at a licensed and permitted mixed low-level radioactive waste disposal facility outside the State of Washington. For the proposed TBI Demonstration,

¹ See *Record of Decision for the Final Tank Closure and Waste Management Environmental Impact Statement for the Hanford Site, Richland, Washington*. 78 FR 75913 (Dec. 13, 2013).

about 2,000 gallons of Tank SY-101 supernate (the uppermost liquid layer of the tank waste that contains low levels of insoluble, long-lived radionuclides) will be pretreated using: in-tank settling, followed by decanting, filtering, and processing through ion exchange media. The decanting (pumping without disturbing the underlying saltcake layer), filtering and ion exchange pretreatment will take place within an In Tank Pretreatment System, installed in Tank SY-101. The pretreated liquid will be transferred into totes (Type A shipping packages). Trucks will transport the shipping packages to a commercial treatment facility, either Perma-Fix Northwest in Richland, Washington, EnergySolutions, near Clive, Utah, Perma-Fix Diversified Scientific Services Inc., in Kingston, Tennessee, or Waste Control Specialists LLC, near Andrews, Texas. At the offsite treatment facility, the waste will be solidified in a grout matrix. DOE plans to dispose of the treated and solidified waste as mixed LLW at either the EnergySolutions disposal facility near Clive, Utah or the Waste Control Specialists Federal Waste Facility (WCS FWF), near Andrews, Texas.

Implementation of the proposed offsite treatment and offsite disposal is contingent upon completion of analysis and issuance of a decision document as required by the National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321, *et seq.* (NEPA). DOE prepared a Draft Environmental Assessment for the proposed TBI Demonstration, *Draft Environmental Assessment of the Test Bed Initiative Demonstration* (DOE/EA-2086) (Draft EA) and provided it to the host and affected States and Indian Tribes, for a 14-day comment period, on August 17, 2021. The Draft EA evaluated DOE's proposal to transport and solidify the pretreated liquid LAW at licensed and permitted commercial treatment facilities off the Hanford Site. The Draft EA also evaluated DOE's proposal to dispose of the solidified waste at an offsite, licensed and permitted commercial disposal facility. The Draft EA also evaluated the No Action Alternative. DOE has prepared the *Final Environmental Assessment of the Test Bed Initiative Demonstration*

(DOE/EA-2086), after considering comments received on the Draft EA. The Final EA will be made available at <https://energy.gov/nepa>.

DOE issued DOE Order 435.1 and DOE Manual 435.1-1 under the authority of the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 *et seq.*, the Energy Reorganization Act, 42 U.S.C. 5801 *et seq.*, and the Department of Energy Organization Act, 42 U.S.C. 7101, *et. seq.* Section II.B.(2)(a) of DOE Manual 435.1-1 sets forth criteria for determining, based on an evaluation, whether waste is incidental to reprocessing, is not HLW, and may be managed as LLW. Those criteria, in relevant part, are that the wastes: “(1) have been processed, or will be processed, to remove key radionuclides to the maximum extent that is technically and economically practical; (2) will be managed to meet safety requirements comparable to the performance objectives, set out in 10 CFR part 61, subpart C, *Performance Objectives*; and (3) are to be managed, pursuant to DOE’s authority under the *Atomic Energy Act of 1954*, as amended, in accordance with the provisions in Chapter IV [of Manual 435.1-1], provided the waste will be incorporated into a solid physical form at a concentration that does not exceed the applicable concentration limits for Class C LLW, as set out in 10 CFR 61.55, Waste Classification.”

The Final WIR Evaluation, including its appendices and supporting references, documents and demonstrates that the criteria in Section II.B.(2)(a) of DOE Manual 435.1-1 will be met. As to the first criterion, key radionuclides will be removed to the maximum extent technically and economically practical. Pretreatment will remove approximately 98.8 % of the key radionuclides (including cesium-137 and its daughter, barium-137m) from the approximately 2,000 gallons of Tank SY-101 supernate. About 1.8 curies will remain in the pretreated waste. Regarding the second criterion, the solidified waste will meet the waste acceptance criteria for the EnergySolutions disposal facility or the WCS FWF, as applicable, which will ensure that the

performance objectives, including doses, will be met for LLW disposal as set forth in the *Utah Administrative Code* and the *Texas Administrative Code* respectively, which are comparable to the NRC performance objectives at 10 CFR part 61, subpart C. With respect to the third criterion, the pretreated and grouted waste will be in a solid physical form, will be well below the concentration limits for Class C LLW, and is expected to meet concentration limits for Class A LLW.

DOE consulted with the NRC and received comments from States, Tribal Nations, stakeholders and the public. After carefully considering NRC consultative advice and comments received, DOE prepared the Final WIR Evaluation. Based on the Final WIR Evaluation, DOE determined, as documented in the associated WIR Determination, that the waste is incidental to reprocessing, is not HLW, and will be managed as LLW. Additionally, DOE determined the pretreated LAW from Tank SY-101 — from which key radionuclides will have been removed to the maximum extent technically and economically practical — will be managed as LLW, subject to the analysis and commitments in the Final WIR Evaluation and WIR Determination.

Signing Authority

This document of the Department of Energy was signed on March 14, 2023, by R. M. Hendrickson, Acting Associate Principal Deputy Assistant Secretary for Regulatory and Policy Affairs, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the *Federal Register*.

Signed in Washington, DC, on March 15, 2023.

Treena V. Garrett,
Federal Register Liaison Officer,
U.S. Department of Energy.

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